MALARIA

Clinical Features: The symptoms of malaria include high fever, chills, rigor, and headache, which may be recurrent and suddenly. If untreated fever and other symptom may occur in a cyclical pattern every second or third day. Other commonly associated symptoms include back pain, sweats, myalgia, nausea, vomiting, diarrhea, and cough. Untreated *Plasmodium falciparum* infection can lead to coma, renal failure, pulmonary edema, and death. The diagnosis of malaria should be considered for any person who has these symptoms and who has traveled to an area in which malaria is endemic. Asymptomatic parasitemia can occur among persons who have been long-term residents of areas in which malaria is endemic.

Causative Agent: *Plasmodium vivax, P. ovale, P. malaria,* or *P. falciparum*

Mode of Transmission: By the bite of an infective female *Anopheles spp.* mosquito. Most species feed at dusk and during early night hours; some important vectors have biting peaks around midnight or early hours of morning. Malaria may also be transmitted by injection or transfusion of blood of infected persons or by use of contaminated needles or syringes, as by drug users. Humans are the only important reservoir of human malaria.

Incubation Period: The time between the infective bite and the appearance of clinical symptoms is approximately 9 to 14 days for *P. falciparum*, 12 to 18 days for *P. vivax* and *P. ovale,* and 18 to 40 days for *P. malariae*.

Period of Communicability: *Plasmodium* may be passed on to biting mosquitoes as long as infective gametocytes are present in human blood; this varies from one to five years depending on the parasite species and response to treatment. The mosquito remains infective for life. Transmission by transfusion may occur as long as asexual forms remain in the circulating blood, up to 40 years. Stored blood can remain infective for at least one month.

Public Health Significance: Even though malaria is not endemic to the United States or Kansas, it remains a public health threat for several reasons: (1) most persons have no protective immunity and can develop a rapid severe disease, (2) malaria cases can transmit the parasites to local mosquitoes, which in turn can pass it onto local residents.

Cases of malaria in Kansas have been reported in individuals with history of foreign travel. However, cases of malaria in travelers are preventable. Persons traveling to areas at high risk for malaria can protect themselves by taking effective antimalarial drugs and following measures to prevent mosquito bites.

Reportable Disease in Kansas Since: 1982

Laboratory Criteria for Surveillance Purposes

- Demonstration of malaria parasites in blood films

Surveillance Case Definitions

- *Confirmed:* an episode of microscopically confirmed malaria parasitemia in any person (symptomatic or asymptomatic) diagnosed in the United States, regardless of whether the person experienced previous episodes of malaria while outside the country.

Comment

- A subsequent attack caused by a different *Plasmodium spp*. is counted as an incident case. In the United States, a subsequent attack caused by the same species may indicate a relapsing infection or treatment failure caused by drug resistance.

Epidemiology and Trends

2005 Kansas Count: 7

	Rate per 100,000	*95% CI*
Kansas Rate	0.3	(0.1 - 0.4)
U.S. Rate (2004)	0.5	*NA*

In 2005, seven cases of malaria were reported in Kansas. The cases ranged in age from 3 to 61 years with a median of 25 years. All of the cases reported recent foreign travel to malaria endemic regions, including Africa (Cameroon, Gambia, and Nigeria) and the Caribbean (Dominican Republic). The species of malaria causing infection was available for five of the seven cases - three cases were infected with *P. falciparum*, one was infected with *P. vivax*, and one case was infected with *P. malariae.*